



BRULE RIVER STATE FOREST MASTER PLAN FACT SHEET

Community Restoration and Old Growth

The Community Restoration and Old Growth Assessment Team (CROG) worked to develop and apply a process using ecological criteria to identify, rank, and map natural plant community and old growth restoration potentials and opportunities. A local landscape data base for the Brule River State Forest was developed.

What role can the Brule River State Forest play in conserving the regional ecology? To answer this question the composition and structure of past and present plant communities in the regional landscape was assessed. The assessment included the relative size,

age, and distribution of plant communities as well as their natural disturbance regimes and successional trends.

The four main ecological units of the Brule River State Forest include the Lake Superior Clay Plain, a small area of the Mille Lacs Upland, a portion of the extensive Bayfield Sand Plain, and the spillway of the Brule River.

The Lake Superior Clay Plain

A lake modified glacial topography of clay till occurs primarily north of County Highway FF. This area is called the clay plain and formerly supported a Wisconsin variation of a boreal forest. In the mid-1800's a conifer-dominated forest occurred on the clay plain. Large white pine towered above a secondary canopy of white spruce and white birch. Balsam fir, aspen, upland white cedar and tamarack were common associates. European settlers dramatically changed the composition and structure of this forest by logging, conversion to agriculture, and severe wildfire.

Today the clay plain forest is dominated by relatively young aspen stands. White spruce and balsam fir occur as an understory in some areas. Mature white spruce and balsam fir occur in several of the ravines on the lower Brule River and its tributaries. The three dominant presettlement trees: white pine, white spruce, and white birch are largely absent from the current clay plain forest.

Mille Lacs Upland

Sugar Camp Hill is part of the Mille Lacs Upland. The presettlement forest was dominated by white pine and yellow birch with a mix of aspen, white birch, sugar maple, white spruce, and balsam fir. Today the area has a second growth forest of sugar maple, basswood, and red oak.

The Bayfield Sand Plain

The sand plain is an extensive area of droughty soils that was formerly a jack pine barrens with some smaller areas of mature red pine forest. The jack pine barrens were maintained by frequent wildfires set by Native Americans and lightning. Today, the sand plain is dominated by forest plantations of red pine and jack pine. In some areas scrub oak has become established in fairly large stands.

The Spillway of the Upper Brule River

Without question the most important element of the Brule River State Forest is the Brule River. Associated with the spillway of the upper Brule River are extensive forested wetlands of white cedar, spruce, and balsam fir. Terraces in the spillway once supported red and white pine forests. Numerous springs and forested seeps occur within the spillway. Old growth forests of white cedar, white pine, and red pine occur on private lands within the boundary of the state forest.

Community Restoration and Old Growth Assessment

Thirty-two natural plant communities were identified on the Brule River State Forest. Eight evaluation classes were selected including community age, current acres, current abundance, presettlement abundance, ecological potential, ownership, Regional Ecological Assessment priority, and Biodiversity Assessment priority.

Assessment Process:

1. Communities were grouped based on current abundance and ecological potential:

a. Abundant and common with high to medium ecological potential:

Jack pine, red pine, aspen, scrub oak, and fir-spruce.

b. Uncommon and rare with high to medium ecological potential:

White pine, white birch, red maple, swamp conifer, black spruce, tamarack, white cedar, swamp hardwoods, pine barrens, alder thicket, aquatic, and emergent aquatic.

c. Uncommon with low ecological potential:

Red oak, northern hardwoods, upland brush, and European grass.

d. Rare with low ecological potential:

Hemlock hardwood, forested seep, tamarack fen, boreal rich fen, open bog, northern sedge meadow, shaded cliff, open cliff, Great Lakes beach, ephemeral pond, and interior beach.

2. Rare communities with low ecological potential were placed into a protection class.

Rareness implies protection needs and low ecological potential implies few restoration opportunities.

3. Priority # 1: Communities identified in the Regional Ecological Assessment and the Biodiversity Assessment as high priority:

A clay plain boreal forest (including upland fir-spruce) and the Brule Bog (including swamp conifers, black spruce, white cedar, swamp hardwoods, forested seep, alder thicket, aquatic, and emergent aquatic).

4. Priority # 2: Communities with medium priority in the Regional Ecological Assessment and communities that have decreased significantly since European settlement:

Pine barrens, white pine, and tamarack.

5. Priority # 3: Communities with medium priority in the Biodiversity Assessment:

Red pine.

Community groups and individual communities were then evaluated for abundance and the ecological opportunity for restoration, old growth, and/or protection.

Results: Communities of Highest Ecological Priority for Community Restoration and Old Growth

1. Priority # 1 for **both Community Restoration and Old Growth:**

Restore an old growth boreal forest in the Lake Superior Clay Plain. This boreal forest would be dominated by white pine, white spruce, and white birch with balsam fir, aspen, upland white cedar, and upland tamarack as common associates.

The composition and structure of the clay plain boreal forest has been dramatically changed since 1850. The dominant trees such as white pine, white spruce, and white birch are largely absent. The forest is, in general, a young second growth aspen forest. It will take a very long time to restore the boreal forest as it occurred in 1850. The basic seed sources are not present. The soil has been changed by severe wildfire. Alder occurs as a dense understory in many aspen stands. Restoration is compromised by the clay soil, which is either too wet or too dry for successful planting of trees.

Restoration includes the re-introduction of white pine, white spruce, and white birch into the clay plain forest and then allowing these trees to grow into a forest with old growth characteristics. This will be a very long, slow process.

2. Priority # 2 for **Community Restoration:**

Restore a small 400 to 600-acre pine barrens.

The best location for a pine barrens restoration is in the area of Motts Ravine Road. Restoration would include cutting and burning to restore the variable structure of a pine barrens with open barrens, jack pine scrub, and pockets of mature red and jack pine.

3. Priority # 3 for **Old Growth:**

Allow the existing older natural stands of red pine and white pine to develop old growth characteristics. Twenty-five stands ranging from 2 to 41 acres and totaling 390 acres have been identified.

4. Priorities for **Protection:**

- a. Protect the Brule River spillway and side slopes, the Brule Bog, and all ravines and side slopes of the Brule River and its tributaries. Emphasize aquatic, alder thicket, white cedar, swamp conifer, black spruce, swamp hardwoods, fir-spruce, red and white pine, and forested seep. Most of these forested wetlands and steep slopes will develop old growth characteristics.
- b. Protect Uncommon Communities: white cedar and aquatic communities outside the spillway and ravines.
- c. Protect Rare Communities: hemlock-hardwood, forested seep, tamarack fen, boreal rich fen, open bog, northern sedge meadow, shaded cliff, open cliff, Great Lakes beach, ephemeral pond, and interior beach.

Communities of low priority for restoration, old growth, or protection (when they occur outside the Brule River spillway, ravines, and side slopes):

Jack pine, aspen, scrub oak, red oak, red maple, northern hardwoods, swamp conifer, black spruce, swamp hardwoods, upland brush, and European grass.

In the normal course of forest management, representation of extended rotations, and perhaps old growth, should be considered, especially in the context of landscape scale management to provide buffers and corridors.